

# United States Patent [19]

Savoie et al.

## [54] VEHICLE TRACKING SYSTEM USING CELLULAR NETWORK

[76] Inventors: Paul-André Roland Savoie, 501 de Gaspé, Ile des Soeurs, Quebec, Canada, H3E 1E7; André Eric Boulay, 54 Daudelin, Kirkland, Quebec, Canada, H9J 2S6

[21] Appl. No.: 08/638,215

[22] Filed: Apr. 26, 1996

[51] Int. Cl.<sup>6</sup> ..... G01S 13/78; G01S 15/74

[52] U.S. Cl. .... 701/214; 701/209; 342/44; 342/457; 342/459

[58] Field of Search ..... 701/30, 207, 209, 701/214, 215; 342/44, 457, 458, 459

### [56] References Cited

#### U.S. PATENT DOCUMENTS

3,680,121	7/1972	Anderson et al.	343/112
4,596,988	6/1986	Wanka	342/457
4,651,156	3/1987	Martinez	342/457
4,818,998	4/1989	Apsell et al.	342/44
4,891,650	1/1990	Sheffer	342/457
4,908,629	3/1990	Apsell et al.	342/457
5,021,794	6/1991	Lawrence	342/457
5,055,851	10/1991	Sheffer	342/457
5,208,756	5/1993	Song	364/449
5,218,367	6/1993	Sheffer et al.	342/457
5,293,642	3/1994	Lo	455/33.1
5,299,132	3/1994	Wortham	364/460



US005895436A

[11] Patent Number: 5,895,436

[45] Date of Patent: Apr. 20, 1999

5,515,043	5/1996	Berard et al.	340/988
5,550,551	8/1996	Alesio	342/457
5,592,180	1/1997	Yokev et al.	342/457
5,731,785	3/1998	Lemelson et al.	342/457

### OTHER PUBLICATIONS

Promotional Literature distributed by Rankin Research of Jul. 1996.

Primary Examiner—V Lissi Mojica

Attorney, Agent, or Firm—Swabey Ogilvy Renault

### [57] ABSTRACT

A vehicle tracking method and system using the cellular network infrastructure is disclosed. A cellular transceiver which is installed in a vehicle that requires tracking, operates on a continuous standby mode to remain constantly accessible to the cellular security provider. The cellular transceiver is turned to an active mode when tracking of the vehicle is initiated. The general location of the stolen vehicle can be determined by paging the cellular transceiver located in the stolen vehicle to identify one or more cell sites located near the stolen vehicle. The information is then relayed to a tracking vehicle which makes use of a radio direction finder to obtain an accurate bearing on the location of the stolen vehicle. In another embodiment, the tracking vehicle which is provided with a radio direction finder can determine using a global positioning system receiver its location with respect to one or more cell sites identified as being close to the stolen vehicle such that the tracking vehicle can quickly travel to the area identified by the selected cell sites.

10 Claims, 8 Drawing Sheets